in receipt of grants from the Board of Education was little more than 600,000*l.*, of which amount the total State grant was roughly one half. The State grants to universities in Prussia alone are more than twice as much as are contributed to our universities from the national exchequer.

Lord Haldane may therefore safely say that the United States and Germany have made far greater strides in university education than have been undertaken in this country. When he wrote the introduction to Sir Norman Lockyer's collection of addresses on education and national progress (1906), he suggested that the private donor should be encouraged, but that the motto of the Chancellor of the Exchequer as regards expenditure upon matters connected with higher education and research should be *Festina lente.* "I do not mean," he wrote, "that the Government ought not to spend public money generously upon the universities. I mean that it should not be spent unless and until a case for the necessity of such expenditure has been clearly made out."

We may be permitted to conclude from the address at Sheffield that Lord Haldane is now of the opinion that a case has been made out for increased national provision for our educational forces. He knows as well as anyone that the great advances being made in education in other countries constitute a formidable menace to ourselves, and that the State can wait no longer for like developments if it desires to maintain a leading position among progressive peoples. He has now stated authoritatively that the Cabinet realises our weakness, and accepts the only policy which will remedy it. We have read this pronouncement with lively satisfaction, and shall welcome any measure which will put the policy into effect.

DR. LUCAS-CHAMPIONNIERE.

THE sudden death of Dr. Just Lucas-Championnière has brought regret to many surgeons in this country, who knew the excellence of his character and of his work. He was seventy years old, surgeon to the Hôtel Dieu (the great hospital in Paris, founded by Saint Louis)—Commander of the Legion of Honour, and member of the French Academy. His father was the first editor of one of the chief medical journals of France; his grandfather had been a leader in the heroic war of La Vendée. From the Collége Rollin, Lucas-Championnière went to the Hôtel Dieu as a student, and was *interne* there in 1865. He became one of the most eminent of all French surgeons of his time, and received honours from many countries, including the Fellowship of the Royal Colleges of Surgeons of London and of Edinburgh. He was a great "all-round" surgeon; but he gave especial study to the operative treatment of hernia, and to the management of fractures. His best recreation—so far as he had time for it—he found in music.

To us over here—some of us may remember his genial presence in London during the 1881 International Medical Congress—he stands for the introduction into France of Lister's antiseptic method. He in France, and Saxtorph in Denmark, were the teachers of the new learning. He came to Glasgow in 1868, and Edinburgh in 1875, that he might learn for himself, watching Lister himself, every detail of the method. He so worshipped the work of Lister that, in the later years of his life, he resented the changes of method, the preference for things "aseptic" over things "antiseptic"; he hoped that surgery would return to "Lister's own method." There are few surgical books more pleasant to handle than his "Pratique de la Chirurgie Antiseptique"—with its portrait of Lister for a frontispiece, and the loyalty and devotion of the writing. It is pitiful to think how slow was the spread of the new learning; what misery was added, for want of the antiseptic method, to the misery of the Franco-German War; what unbelief, and worse than unbelief, delayed the universal recognition of Lister even in our own country.

NOTES.

A ROYAL Commission has been appointed to inquire into the subject of venereal diseases in the United Kingdom. The terms of reference are:—To inquire into the prevalence of venereal diseases in the United Kingdom, their effects upon the health of the community, and the means by which those effects can be alleviated or prevented, it being understood that no return to the policy or provisions of the Contagious Diseases Acts of 1864, 1866, 1869 is to be regarded as falling within the scope of the inquiry. The members of the Commission are:—Lord Sydenham of Combe, G.C.S.I., F.R.S. (chairman), the Right Hon. Sir David Brynmor Jones, K.C., M.P., Mr. Philip Snowden, Sir Kenelm E. Digby, G.C.B., K.C., Sir Almeric FitzRoy, K.C.B., Sir Malcolm Morris, K.C.V.O., Sir John Collie, Dr. A. Newsholme, Canon J. W. Horsley, the Rev. J. Scott Lidgett, Dr. F. W. Mott, Mr. J. E. Lane, Mrs. Scharlieb, Mrs. Creighton, and Mrs. Burgwin. The secretary to the Commission is Mr. E. R. Forber, of the Local Government Board, to whom any communications on the subject may be addressed.

BY Order in Council dated October 14 new denominations of standards of the metric carat of 200 milligrams and its multiples and submultiples have been legalised for use in trade in the United Kingdom on and after April 1, 1914. The permissible abbreviation of the denomination "metric carat" is "C.M." The weights legalised range from 500 C.M. to 0·005 C.M., the series being 5, 2, 1 throughout. The legalisation of the metric carat has been undertaken by the Board of Trade after consulting representatives of the trade in diamonds and precious stones, and is the outcome of a resolution passed at the General Conference on Weights and Measures, held in Paris in 1907, advocating the adoption of an international standard carat. Diamond dealers in this country were at first opposed to any change, and it is only quite recently that they have found it necessary to reconsider their views on the subject, owing to the progress made on the Continent in enforcing the adoption of the metric carat. The new standards are intended to displace the old English carat weight, which has never had legal sanction, but has long been in use in this country, and is recognised by the trade as defined by the relation 151½ carats = 1 oz. troy, so that it is equivalent to 3·1683 grains, or to 205·3 milligrams nearly.

By the death of Mr. William Hunting, on October 24, the veterinary profession has lost one of its most brilliant members, and the public in general one of its most strenuous workers in the cause of public health, especially in relation to the prevention of diseases transmissible from animals to man. Mr. William Hunting was born in 1844, receiving his early education at the Edinburgh Academy, and his professional training at the New Veterinary College, Edinburgh. He obtained his diploma of membership of the Royal College of Veterinary Surgeons in 1865, and became a fellow in 1877. His former teacher, Prof. Gamgee, established a veterinary college in London, and selected him to teach anatomy and physiology, and after a while Mr. Hunting was appointed professor of veterinary science at the Royal Agricultural College, Cirencester. He did not retain this chair for long, and eventually he settled in general practice in London, where he was brought into daily contact with glanders in horses, a disease with which his name will always be associated. He was later elected to the council of the Royal College of Veterinary Surgeons, and became its president, the highest honour his profession could bestow on him, in 1894–5. Mr. Hunting was acknowledged to be the greatest authority on clinical glanders, and it was mainly owing to his efforts that the London County Council instituted its campaign against this disease which was so easily communicable to man, and almost invariably fatal. For this purpose the L.C.C. appointed him as its chief inspector, from which post he retired under the age limit. He lived, however, to see the disease got well under control with every prospect of its being completely eradicated in a comparatively few years. He published an illustrated monograph on glanders in the horse and in man, the best work in existence on the disease, and he has also contributed the chapter on this affection in Hoare's "System of Veterinary Medicine." He had only recently been invited to provide a paper on the same subject for the International Veterinary Congress, which will meet in London in 1914. He founded and edited *The Veterinary Record,* and published a standard work on horse-shoeing, and was also a prolific writer to the veterinary Press. Amongst the many offices he held at the time of his death, Mr. Hunting was president of the National Veterinary Association, examiner for the membership and fellowship of the Royal College of Veterinary Surgeons, examiner for the membership of the Royal Agricultural College, and for the meat inspector's certificate of the Royal Sanitary Institute. He was also a member of the board of studies in veterinary science in the University of London, and a governor of the Royal Veterinary College.

Dr. F. H. Hatch has been elected president of the Institution of Mining and Metallurgy for the forthcoming year.

Mr. Stephen Reynolds, a member of the Departmental Committee inquiring into the condition of the inshore fisheries, has been appointed adviser on these fisheries to the Development Commission.

Dr. H. R. Mill, director of the British Rainfall Organisation, has been compelled to take a complete rest for a time on account of his eyes, which have been affected by the continual strain of his work. He will leave next month for a voyage to New Zealand, and is advised not to attempt to take up for at least a year any work which involves close attention. It is hoped that the rest and change will have a decidedly beneficial effect upon Dr. Mill's eyesight and general health.

The young Malay elephant at the Zoological Gardens, which had been ailing for some time, died in the latter part of last week. The skin has been consigned to Messrs. Rowland Ward, Ltd., by whom it will be mounted for the Natural History Museum. At the time of its death the animal, although about three years old, still retained the hairy coat of newborn Asiatic elephant calves.

In *The Field* of October 25 Mr. R. I. Pocock records the acquisition by the Zoological Society of the second known example of the South American short-eared dog, or fox (*Canis sclateri*). The first specimen was acquired by the society in 1882, and described by Dr. Sclater under the preoccupied name of *C. microtis.* In neither case is the precise habitat known, but Mr. Pocock, who also refers to the peculiarity of the association of short ears with small bodily size, considers that the species is probably a forest animal.

An exhibition of "Nature Photographs," organised by the Nature Photographic Society, is now being held at the house of the Royal Photographic Society, 35 Russell Square. It consists of 132 photographs of birds, animals, flowers, fungi, insects, &c., generally of a high order of merit, and many of them by workers who have earned a considerable reputation for work of this kind. Admission to the exhibition is by presentation of visiting card, between 11 and 5, until November 15. The photographs shown are just of the kind that must appeal to those interested in nature-study.

The annual dinner of the London School of Tropical Medicine was held at Prince's Restaurant on October 24, Dr. F. M. Sandwith presiding, and among those present were Lord Milner, Mr. Percival Nairne, Sir Charles Lukis, Sir J. West Ridgeway, Sir John Anderson, Surgeon-General May, Sir Patrick Manson, and many others. Mr. Austin Chamberlain, proposing the toast of the school, referred to the progress which tropical medicine has made during the last twenty-five years, and said that it is a matter of national pride that in so beneficent a movement our countrymen stand in the forefront in regard to the new learning which is being acquired. The London School has appealed for a sum of 100,000*l.* for endowment, research, and endowment of beds for certain tropical cases, of which about 70,000*l.* has been obtained. A pleasing event of the evening was the presentation to Sir Patrick Manson, the *doyen* of tropical research, of two portraits of himself on behalf of the subscribers, by Mr. Cantlie and Dr. Prout, representing the London and Liverpool Schools respectively.

A violent wind-storm passed over part of Wales on Monday night, October 27, causing damage roughly estimated at between 30,000*l.* and 50,000*l.*, and the loss of two lives, as well as injuries to many people. Two men named Woolford and Breeze were walking arm-in-arm when they were caught by the wind and blown a distance of thirty yards. Woolford fell on his head and was killed, and Breeze had two ribs fractured. From the position in which the dead body of a man named Harries was found in a field near Abercynon it is believed that the man must have been carried 300 or 400 yards by the force of the gale. Along the whole Taff Valley, from Treforest past Cilfynydd and by Quakers Yard to Treharris wrecked structures and up-rooted trees mark the path of the storm. It was first felt at Treforest, and it seemed to gather force as it entered the valley at Cilfynydd. Along the whole way the storm was confined to a path about 200 yards wide.

At the annual public meeting of the Five Academies, held last week at Paris, a paper on the subject of prehistoric trepanning was read, by the late Dr. Lucas Championnière; it dealt with instances of the operation, beginning with the first discovery of such a skull by M. Prunières under a dolmen in the Lozère, among the cave men, the ancient Gauls, and the pre-Columbian Americans. These people performed trepanning by means of flints, and the writer had succeeded in piercing the skull of an adult in the dissecting-room in thirty-five minutes by means of a flint, which was not specially sharpened. He attributed the skill of these early surgeons to the now lost art of rotating instruments in fire-making. The operation was performed in the case of serious skull wounds, and also to relieve headache and epilepsy, by releasing the spirit to which the attacks were attributed. He himself had seen a native at Biskra, in Algeria, whose head showed four perforations, and he and his brothers asserted that they had trepanned their own father twelve times. It is remarkable that the operation was not practised among highly civilised races, like Greeks, Egyptians, Arabs, Hindus, and Chinese, or among some peoples of low culture, like African negroes.

At the annual general meeting of the Royal Society of Edinburgh, held on October 27, the following office-bearers and councillors were elected:—*President:* Prof. James Geikie, F.R.S. *Vice-Presidents:* Dr. J. Burgess, Prof. T. Hudson Beare, Prof. F. O. Bower, F.R.S., Sir Thomas R. Fraser, F.R.S., Dr. B. N. Peach, F.R.S., and Sir E. A. Schäfer, F.R.S. *General Secretary:* Dr. C. G. Knott. *Secretaries to Ordinary Meetings:* Dr. R. Kidston, F.R.S., and Prof. A. Robinson. *Treasurer:* Mr. J. Currie. *Curator of Library and Museum:* Dr. J. S. Black. *Councillors:* Prof. T. H. Bryce, Mr. W. A. Carter, Mr. A. Watt, Dr. J. H. Ashworth, Dr. J. G. Gray, Prof. R. A. Sampson, F.R.S., Prof. D'Arcy W. Thompson, C.B., Prof. E. T. Whittaker, F.R.S., Principal A. P. Laurie, Prof. J. Graham Kerr, F.R.S., Dr. L. Dobbin, Mr. E. M. Wedderburn. It is worthy of note that the presidents of the Royal Societies of London and of Edinburgh are brothers, natives of Edinburgh, and both geologists.

At the annual general meeting of the Cambridge Philosophical Society, held on October 27, the following officers and council were elected:—*President:* The Master of Christ's. *Vice-Presidents:* Prof. Pope, Dr. Barnes, and Prof. Seward. *Treasurer:* Prof. Hobson. *Secretaries:* Mr. A. Wood, Mr. F. A. Potts, and Mr. G. H. Hardy. *Other Members of Council:* Sir J. J. Thomson, Mr. J. E. Purvis, Mr. R. P. Gregory, Dr. Cobbett, Mr. J. Mercer, Dr. Marshall, Mr. G. R. Mines, Mr. F. J. M. Stratton, Prof. Woodhead, Mr. C. Forster Cooper, Mr. C. E. Inglis, and Dr. Duckworth.

At the annual meeting of the Prehistoric Society of East Anglia, the honorary secretary made an announcement, which will be welcome to archæologists, that the society proposes to undertake a survey of Grime's Graves, at Weeting. A few of these constructions were superficially studied in 1852, and one was carefully examined by Canon Greenwell in 1870. But much still remains to be done, and the importance of flint implements of the Cissbury type found in the caves has been greatly increased by the suggestion of Mr. Reginald Smith that they are analogous to those of the Aurignacian age found on the Continent. Contributions are invited for the prosecution of this undertaking by Mr. W. G. Clarke, 12 St. Philip's Road, Norwich. The president, Mr. J. Reid Moir, discussed the fractured flints found in the Eocene "Bullhead" bed at Coe's Pit, Bramford, near Ipswich, with special reference to the views of M. Breuil, who is inclined to regard the fractures as the result of natural pressure. The Ipswich bed is now overlaid by some 40 ft. of deposits, partly sand, and it is difficult to imagine how pressure on the lower strata could have been exercised through such a medium. Mr. Reid Moir concludes, from experiments, that pressure may account for the fractures. If this be the case, it must have been exercised before the deposition of the present overlying strata. In later beds the "human touch" is sufficiently obvious, and it is thus possible to differentiate one type from the other with some confidence.

The Eugenics Review for October (v., No. 3) contains matter of much interest for the citizen. The Chancellor of Stanford University, U.S.A., writes on the eugenics of war, pointing out that it is the best part of the population that becomes the military, and that a country, therefore, by the ravages of war, suffers not only at the time but for generations afterwards. "Wars are not paid for in war-time; the bill comes later," as Benjamin Franklin said. Mr. Sören Hansen marshals evidence on the inferior quality of the first-born children, and a State not only loses citizens by the limitation of families, but is also penalised thereby by a deterioration in racial quality.

THE monograph published by Prof. P. N. Ure, and issued by the Oxford University Press, on black glaze pottery from Rhitsona in Bœotia (pp. 63+xix plates, price 7s. 6d. net) is a useful contribution to our knowledge of Greek ceramics. Our information on the history of the Bœotian federation from literary sources is confined to Thebes; that of the minor members must be discovered by the spade. If this pottery could be accurately dated it would supply much useful evidence. The present monograph has established the leading facts, which must be supplemented by further excavation and examination of the material.

THE Danysz rat virus, consisting of a cultivation of a microbe which produces a fatal infectious disease among rats, has been used with considerable success for the extermination of rats in many districts. The accompanying illustration shows the preparation of the "bait," made by impregnating crushed oats with the virus, for use in Kaltern, a village in the Austrian Tyrol, which had suffered severely from an invasion of field rats.

Saturating crushed oats with Danysz virus at Kaltern, Austrian Tyrol.

THE age of the earth has long been a favourite topic for discussion, and conclusions have been arrived at from time to time remarkable mainly for their variety. This variety is likely to characterise for a long time to come other conclusions that may follow, for the simple reason that at present we lack the data for dealing with the subject in a comprehensive way. Estimates of geologic time, founded upon one set of facts and assumptions, are found to be difficult to square with those based upon other and equally trustworthy sets. Mr. H. S. Shelton considers some methods of attacking the problem in the October number of *Science Progress.* He points out the absence of sufficiently good data for the average rate of erosion of rocks, and suggests that further information could be obtained if we possessed fuller details concerning the extent of particular local formations. Of the geochemical methods he thinks the best is probably that based on calculations concerning the amount of limestone in the rocks of the earth; and from Mellard Reade's deductions he believes it is "possible to assess a probable minimum of the order of 500,000,000 of years." Respecting the estimates of Strutt, based on the study of helium and radioactive minerals, he says: "The most we can now infer is a moderate minimum of time, a result that is given equally well by other data if properly handled." Concerning biological evidence, he says: "The biologist has no independent standard of time. Vague as are the data of the geologist, those of the biologist are still more uncertain." Finally: "What we are entitled to say on the evidence before us—biological, geological, and physical—is this: It would be absurd to attempt, on very insufficient data, to give an estimate of the probable lapse of geologic time. But there is, at the present day, no reason whatever why it should not be a thousand million of years or a time even greater." This does not carry us very far, and Mr. Shelton's suggestions for further study of the problem are somewhat trite.

THE October number of *The Entomologists' Monthly Magazine* contains a memoir and portrait of the late Dr. O. M. Reuter, the celebrated hemipterist, who died on September 2, in his native town of Abo, at the age of sixty-three.

THE report of the Entomological Society of Ontario for 1912 mainly deals with the infestations of injurious insects in the Dominion and the best means of keeping them in check. Great aid in this work has been afforded by the establishment of field laboratories in various districts, which have enabled investigations to be carried on over much wider areas than was previously possible. Another feature of the year's work has been an increased importation of parasitic enemies of some of the most noxious insects, notably the introduction of cocoons of the larch-sawfly infected with an ichneumon-fly from the English Lake District.

THE beautiful colours of thin films observable with Mr. C. V. Boys's scientific toy, "The Rainbow Cup," were referred to in a Note in our issue of January 23 of this year (vol. xc., p. 579). A cheap form of the instrument is now available from Messrs. J. J. Griffin and Sons, Ltd., the price being 2s. 6d. only instead of 25s. Though the new form is, of course, not so good as the more expensive instrument, it shows the changing colour patterns in a very pleasing way, and should interest a large section of the general public. An explanatory pamphlet is included in the box containing the instrument and the soap solution.

THE Royal Meteorological Institute of the Netherlands has issued a useful paper on the rainfall of that country (*Mededeelingen en Verhandelingen,* 15), with maps and tables showing the annual and seasonal distribution. The work is a continuation prepared by Dr. Hartman of one published by Engelenburg in 1891, since which time the number of stations has greatly increased, and is the first instalment of a general climatology of the Netherlands. In addition to the annual means for the whole period, which differs for each station, all the means for the twenty-five years, 1881–1905, have been calculated, as this period has been adopted as a normal time for comparison by the Solar Commission of the International Meteorological Committee. The extreme annual values for this series vary from 828 mm. (32·6 in.)

at Leeghwater (South Holland) to 596 mm. (23·5 in.) at Kampen (E. Zuider Zee). The rainfall diminishes considerably near the coasts; at some distance from these it increases, and afterwards the diminution becomes progressive and general with distance from the sea. The maximum values occur in July, August, and October; the minimum values occur generally in February and April. In July the increased rainfall is due chiefly to thunderstorms.

THE present autumn has many meteorological features of especial interest. Only one-third of the autumn now remains, and although there is ample time for a thorough change to set in, there are at present no indications of generally colder conditions. The weekly reports issued by the Meteorological Office show an excess of temperature since the close of summer at the end of August, in all parts of the British Isles, and over England and Ireland the excess amounts to 3° for the period embraced by September and October. The absence of low temperatures is very pronounced, and at Greenwich the lowest shade temperature for October is 36°, while to October 28 there were nine nights with the thermometer above 50°. In October last year sharp frost was experienced on October 5 and 6, but it is not altogether uncommon to escape frost throughout the month, and in 1910 the lowest temperature at Greenwich for October was 39·6°. On twenty-one days out of the first twenty-eight days in October this year the shade temperature at Greenwich had exceeded 60°, and even towards the close of the month such high temperatures were fairly common. The autumn rains have so far been in excess of the average over the midland and eastern districts of England, but there is generally a deficiency in the western districts.

IN his remarks on Dr. Bohr's letter on the spectra of helium and hydrogen, in NATURE of October 23, p. 232, Prof. Fowler referred to certain corrections required in the wave-lengths calculated for the lines near $H\beta$, $H\gamma$, &c., as given in the original submitted to him. Dr. Bohr, however, corrected these wave-lengths in the proof, thus rendering Prof. Fowler's corrections unnecessary. We are asked to mention this in order to remove any ambiguity to which the reference to corrected wave-lengths may have given rise.

THE September number of *Terrestrial Magnetism and Atmospheric Electricity* devotes twenty pages to an account of the magnetic work of the Astronomer Royal, Edmund Halley. In 1698 he was placed in command of the *Paramour Pink* in order "to improve the knowledge of the longitude and the variations of the compasse." He spent two years taking observations in the Atlantic between latitudes 50° N. and 52° S., and published his results in a "General Chart of the Variations of the Compass" in 1701. The journal in which he entered all his observations is reprinted under the editorship of Messrs. Ault and Wallis, of the department of terrestrial magnetism, and Dr. Bauer has collected together the references to Halley's magnetic work in the journals of the Royal Society, and gives reprints of the letterpress which accompanied the sea charts of the western and southern oceans, and of the whole world.

SOME interesting results are recorded by Messrs. F. A. Sannino and A. Tosatti in the *Atti R. Accad. Lincei* (vol. xxii., ii., No. 5) of the effect of manuring grape vines with manganese sulphate. The result of the application is considerably to increase the yield of grapes per hectare, but the must obtained in the vintage is poorer in glucose, and higher in acidity than with the control, carried out on the same land, but without the addition of manganese. The wine obtained after fermentation shows a quite characteristic odour and flavour, and tends to resemble Marsala or Madeira. At the same time a tendency to develop turbidity is shown which is also found in wines when too rich in oxydases. The proportion of manganese present in the ash of the wine is at the same time markedly increased.

COMMENTING on the loss of the German naval airship *Zeppelin L2*, *The Engineer* for October 24 does not consider that present constructive methods will ever render available the tactical superiority of airships. No dirigible balloon has yet been constructed which has fulfilled its function otherwise than by dodging the forces of nature. It is held that both commercially and constructionally, the dirigible balloon of to-day appears to be an absurdity. Further, there is little reason to hope that conditions will change, and that new materials and methods of construction will be made available.

THE "James Forrest" lecture for 1913 was delivered by Mr. Alexander Gracie in the new buildings of the Institution of Civil Engineers on October 23, the subject being twenty years' progress in marine construction. Increase in size of vessel is undoubtedly the most valuable resource of the naval architect, as it leads directly towards the attainment of greater comfort, speed, and economy. Twenty years ago, the premier Atlantic vessel was the *Campania,* 600 ft. in length, 65 ft. in beam, and 41 ft. 6 in. in depth. To-day the largest vessel afloat is the *Imperator,* 880 ft. by 90 ft. by 63 ft. The Cunard liners *Lusitania* and *Mauretania* have been surpassed in size, but still hold their supremacy in speed unchallenged; these vessels maintain an ocean speed of between 25 and 26 knots. The advance has been greatly facilitated by the introduction and development of the steam turbine, which has provided the way to further progress in economy, lightness, and the construction of very large units, while at the same time eliminating vibration troubles and relieving the difficulties of engine-room management. Twenty years ago, the majority of cross-Channel vessels were paddle-steamers. Typical vessels were the paddle-steamer *Calais Douvres* and the twin-screw *Ibex.* The former vessel had a displacement of 1065 gross tons, and engines of 6000 indicated horse-power gave a speed of 20·64 knots. The corresponding dimensions of the latter vessel were 1062 gross tons, 4200 indicated horse-power, and 19·37 knots. The introduction in 1911 of geared-turbines in the *Normannia* and *Hantonia* has led to a great economy in fuel, these vessels using but 43 tons of coal per trip, as compared with 70 tons used by their immediate predecessors of the same capacity, but propelled by direct-driven three-screw turbines. Last summer, the Channel steamer *Paris,* fitted with geared turbines, attained the remarkable speed of 25·07 knots—a result which has only been surpassed by torpedo craft. Hydraulic transmission has lately been developed in Germany, and electrical transmission has also been applied to several vessels. Cargo steamers have advanced from 6400 to 9600 tons dead-weight, at practically constant speed of 11 knots. There are many attractive possibilities in the problem of producing a trustworthy internal-combustion engine able to compete successfully with the steam-engine and geared turbine.

OUR ASTRONOMICAL COLUMN.

ASTRONOMICAL OCCURRENCES FOR NOVEMBER :—

Nov. 1. 16h. 0m. Mercury at greatest elongation east of the Sun.
2. 21h. 18m. Jupiter in conjunction with the Moon (Jupiter 4° 35′ N.).
4. 11h. 32m. Uranus in conjunction with the Moon (Uranus 3° 26′ N.).
5. 8h. 0m. Venus at greatest heliocentric latitude N.
12. 13h. 0m. Mercury stationary.
15. 12h. 25m. Saturn in conjunction with the Moon (Saturn 6° 49′ S.).
18. 7h. 6m. Mars in conjunction with the Moon (Mars 2° 23′ S.).
,, 13h. 21m. Neptune in conjunction with the Moon (Neptune 4° 40′ S.).
22. 18h. 0m. Mercury in inferior conjunction with the Sun.
26. 7h. 33m. Venus in conjunction with the Moon (Venus 5° 41′ N.).
,, 23h. 32m. Mercury in conjunction with the Moon (Mercury 6° 43′ N.).
27. 0h. 0m. Mars stationary.
30. 16h. 5m. Jupiter in conjunction with the Moon (Jupiter 4° 12′ N.).

A NEW COMET.—A Kiel telegram, dated October 24, distributes the information communicated by Prof. Hartwig that on October 23 Dr. Zinner discovered a comet of the 10th magnitude at 7h. 58·8m. M.T. Bamberg. Its position is given as R.A. 18h. 40m. 1s., and declination −4° 32′ 38″, and the object was observed to have a tail. The comet is thus situated in the constellation of Aquila, a little less than half-way between λ Aquilæ and η Serpentis.

COMET METCALF 1913*b*.—The following is the ephemeris for Metcalf's comet as calculated by Herr A. Kobold, and published in *Astronomische Nachrichten,* No. 4686 :—

12*h*. *M.T. Berlin.*

	R.A. (true) h. m. s.	Dec. (true) ° ′	Mag.
Oct. 30	20 46 53	+4 25·8	
31	46 31	3 13·9	
Nov. 1	46 13	2 6·1	
2	45 58	1 2·0	9·7
3	45 47	+0 1·5	
4	45 39	−0 55·9	
5	45 33	1 50·1	
6	45 31	2 41·4	9·9

This faint comet is now just moving into the constellation of Aquarius, and is only a suitable object for telescopes of large aperture.

COMET WESTPHAL (1913*d*).—Comet Westphal is becoming a faint object, being now a little fainter than 8·5 magnitude. The following is a portion of the ephemeris published by Hermann Kobold in *Astronomische Nachrichten,* No. 4687 :—

12*h*. *M.T. Berlin.*

	R.A. (true) h. m. s	Dec. (true) ° ′	Mag.
Oct. 30	20 40 35	+23 16·8	
31	39 38	23 53·8	
Nov. 1	38 46	24 30·4	8·6
2	37 56	25 6·5	
3	37 11	25 42·3	
4	36 30	26 17·7	
5	35 51	26 52·8	8·6
6	35 17	27 27·5	

The comet is moving in the constellation of Vulpecula, and is in a good position for observation.

ELEMENTS AND NUMBERS OF MINOR PLANETS.—The growth in the number of the minor planets discovered is clearly brought out in the two interesting communications by Dr. Cohn in *Astronomische Nachrichten,* No. 4688. In the first paper he refers to the elements and numbering of these bodies, and points out that in the interval, July 1, 1912, to June 30, 1913, sixty-seven objects have been given provisionary numbers. Five of these have been identified as old members of the group. Of the sixty-two remaining, nineteen hail from Heidelberg, seven from Johannesburg, nine from Neuchâtel, eleven from Simeïs, three from Vienna, and thirteen from Winchester. Of this number twenty-one have had their elliptical orbits checked and numbers assigned to them.

In the second communication Dr. Cohn points out the unsatisfactory state, and possibility of mistakes, in the present system of lettering the planets, owing to their great number, and suggests, with the help of other astronomers, a set of names for the planets from No. 570 to 727. As an example, it may be stated that 697 has been named "Galileo," as it was discovered on the day of the three hundredth anniversary of the discovery of Jupiter's satellites. 727 is termed "Nipponia," as the planet was discovered twice by Herr Hirayama in Tokio.

THEORETICAL ASTRONOMICAL RESEARCH.—A circular regarding a plan for an institute for theoretical astronomical research has reached us from Lund, Sweden. It is a timely plea for financial support for a neglected part of astronomy. The work suggested as specially suitable to be undertaken by the institute is in the first place the investigations of the orbits of the asteroids, work which it is confidently anticipated will lead to the solution of "the problem of three bodies," and perhaps also solve the enigma of the evolution of the heavenly bodies. This work would be undertaken by three of a proposed staff of eight "theoretical astronomers." Two more would work at the problem of three bodies; to another couple would be assigned various cosmological problems, such as the figure of the heavenly bodies, tides, and related problems. The remaining astronomer would be required to deal with stellar statistics. These men would be of the standing of university professors, and have rather better pay. Each astronomer would have one algebraical computer and two numerical computers at his personal disposal, and should the necessity arise additional computers would be available. The project is conceived in a princely manner, the proposed yearly budget being 200,000 marks (German) (10,000*l.*), and the complete scheme requires a capital sum of 5,600,000 marks (280,000*l.*). Calculating machines, worked by lady computers, would be employed for the numerical calculations, and no fewer than 100,000 marks (5000*l.*) is proposed to be spent on machines.